Near- and Far Field Measurements with High Frequency Range

The Compact Antenna and RCS Test Range has been designed for antenna, radome and RCS measurements under plane wave conditions. The far field is achieved by two parabolic reflectors, which allow accurate measurements in a test zone (quiet zone) with diameter of 2.4 m and a frequency range from 2 GHz up to 100 GHz. The possibility of direct illumination provides real time measurements for frequencies lower than 2 GHz. The 14 m x 7 m x 6 m anechoic chamber is fully lined with pyramidal foam and high power absorbers.

High Resolution

A 6-axis control unit with 0.03° accuracy assures high resolution measurements. The antenna is mounted on a rotor to change polarization easily. For RCS measurements a foam lined tower can be used to minimize undesirable wave propagation effects and to guarantee accurate measurements.

Easy Data Handling

Measurements are performed with the Antenna and Radar Cross Section Measurement System (ARCS) of March Microwave Systems B.V. and the Analysis, Graphics and ISAR tool provide many options for post-processing. A dual computer system allows acquisition and processing simultaneously in a room next to the anechoic chamber.

Powerful Hardware

To transmit and receive signals a Rhode & Schwarz ZVA 40 is used. Fast sweep time and high measurement speed with less than 3.5 \( \mu \)s per test point enlarge the performance of the system. An attenuator/switch driver handles the polarization of the transmitted signal automatically. Waveguides instead of coaxial cables minimize the loss of antenna-received signals.

For customer requests please contact:

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TECHNICAL SPECIFICATIONS

DIMENSIONS
Test Chamber: 14 m x 7 m x 6 m
Subreflector: 3.2 m x 3.8 m
Main Reflector: 4.8 m x 3.8 m
Test Zone Diameter: 1.6 m (2.4 m)

FREQUENCY RANGE:
2 – 100 GHz
(< 2 GHz possible on request)

AMPLITUDE RIPPLE:
< 0.7 dB pp

PHASE RIPPLE:
< 7° pp

SENSITIVITY
(detectable cross section, S/N > 10 dB):
-75 dBsm 2 GHz
-70 dBsm 18 GHz
-65 dBsm 40 GHz
-50 dBsm 95 GHz

DYNAMIC RANGE:
> 90 dB 2 GHz – 40 GHz
> 75 dB 95 GHz

POSITIONER
Elevation over azimuth rotor and additional model tower
with polarization head, mounted on motorized slide.

6-Axis Control Unit

Max. Load Az.-Rotor: 2250 kg
Bending Moment: 6622 Nm

Max. Load Model Tower: 200 kg
Bending Moment: 2650 Nm

Accuracy: +/- 0.03°

RF-EQUIPMENT
Rhode & Schwarz ZVA 40
HP 11713A Attenuator/Switch Driver
HP 8349B Microwave Amplifier

DISPLAYS
Cartesian plots, Polar plots,
Contour Plots
Waterfall plots
Etc.

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